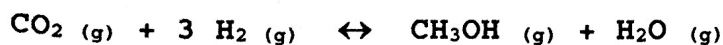


Manipulations of the Equilibrium Constant

1. Predict the equilibrium constant for:

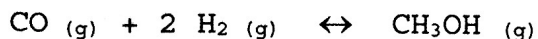


$$K_1 = ?$$

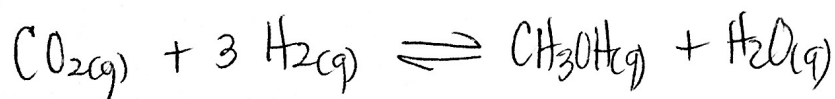
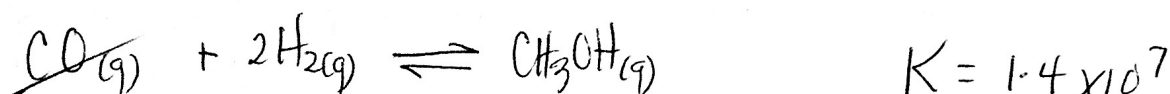
given the equilibrium constants for the following reactions.



$$K_2 = 1.0 \times 10^5$$

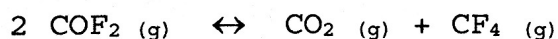


$$K_3 = 1.4 \times 10^7$$



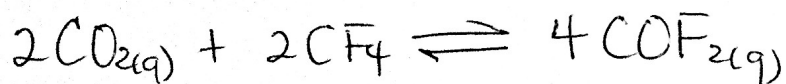
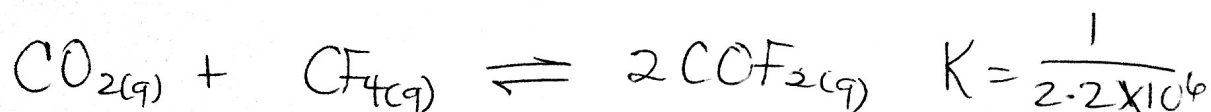
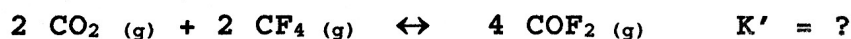
$$K = \left(\frac{1}{1.0 \times 10^5} \right) (1.4 \times 10^7) = \underline{140}$$

2. Consider the following chemical equation and equilibrium constant at 25 °C.



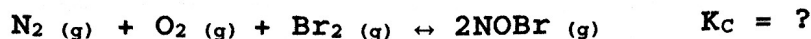
$$K_c = 2.2 \times 10^6$$

Compute the equilibrium constant for the following reaction at 25°C.

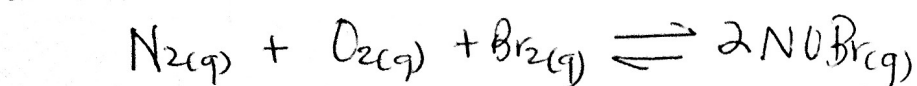
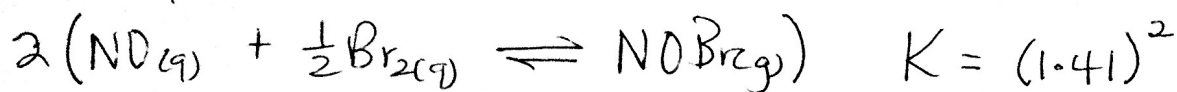
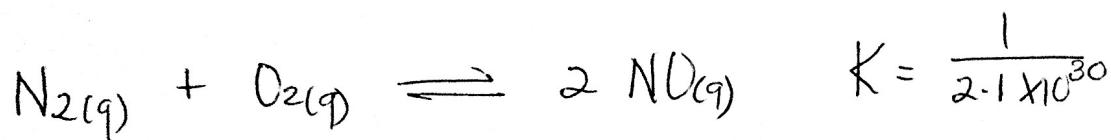
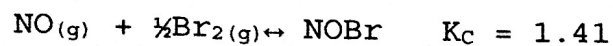
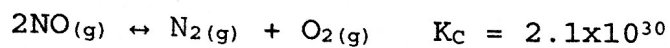


$$K = \left(\frac{1}{2.2 \times 10^6} \right)^2 = 2.1 \times 10^{-13}$$

3. Find K_c for the following reaction:



Use the following data to find K_c :



$$K = \left(\frac{1}{2.1 \times 10^{30}} \right) (1.41)^2 = 9.5 \times 10^{-31}$$